

### **REMARKS**

This responds to the Office Action mailed on March 24, 2004. Claims 272-274 are amended; as a result, claims 1-52, 108-126, 136-154 and 272-275 are pending in this application. Applicant does not admit that the cited references are prior art and reserves the right to “swear behind” each of the cited references as provided under 37 C.F.R. 1.131.

#### **§103 Rejection of the Claims**

1. Claims 1, 2, 9, 11, 12, 13, 108, 118, and 120-122 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782, “Yamamoto”) in view of Taguchi et al. (U.S. 6,429,372, “Taguchi”). Applicant respectfully traverses the rejection. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some motivation or suggestion, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second there must be a reasonable expectation of success. Finally, the prior art references (or references when combined) must teach or suggest all of the claim limitations. *M.P.E.P. § 2143*.

Among the differences, claim 1, as amended, recites “a material having a Young's modulus of between about .1 megapascals and less than 3 megapascals, at a solder reflow temperature, attaching the die to the substrate.” (emphasis added). Applicant respectfully submits that the combined references do not teach or suggest all of the claim limitations.

The Office Action indicated that “Yamamoto et al. fail to teach the YM between 0.1 and less than 3Mpa.” Office Action at page 3. The Office Action then makes a conclusory statement (without support via citations therein) that Taguchi discloses an adhesive “having the YM between 0.1 and less than 3MPa.” In particular, the Office Action only provided citations in Taguchi that allegedly disclose an adhesive having a YM of about 1.0MPa. See Office Action at page 3.

Therefore, a first reference (Yamamoto) specifically teaches **NOT** to use a material having a Young's Modulus (YM) that is **less than 3 megapascals** (See discussion in response to an office action mailed 12/01/03). A second reference (Taguchi) (by Examiner's own

admission) only allegedly discloses an adhesive having a YM “of about 1.0 MPa (see Figure/Table 14) to achieve the desired joint strength and to reduce thermal stress (Col. 13, line 52 – Col. 14, line 17).” Office Action at page 3. Accordingly, Applicant respectfully submits that **neither reference teaches the claimed range of about 0.1 megapascals to less than 3 megapascals.**

Moreover, “[i]f proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).” (emphasis added) *M.P.E.P. § 2143.01*. Also, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *M.P.E.P. § 2141.02.I*.

The Office Action is attempting to combine two references, wherein such combination would render at least one reference “unsatisfactory for its intended purpose.” In particular, the Office Action is attempting to combine a first reference (Yamamoto) (that specifically teaches NOT to use an adhesive having a Young’s Modulus (YM) that is less than 3 megapascals) with a second reference (Taguchi) (that the Office Action alleges) discloses the use of an adhesive of 1.0MPa. The two reference are, therefore not combinable. Accordingly, the Office Action has not established a *prima facie* case of obviousness. Therefore, Applicant requests withdrawal of the rejection and reconsideration and allowance of claim 1, 2, 9, 11, 12, 13, 108, 118, and 120-122.

2. Claims 3-6 and 110-114 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Taguchi et al. (U.S. 6,429,372) as applied to claims 1 and 108 respectively above, and further in view of Yew et al. (U.S. 6,049,129) and Yamagata (U.S. 5,552,637). Applicant respectfully traverses the assertion.

Claims 3-6 depend on base claim 1 and claims 110-114 depend on base claim 108. Claims 3-6 and 110-114 are believed to be allowable at least for the reasons stated previously for their base claims, namely claims 1 and 108. Applicant respectfully requests reconsideration and allowance of claims 3-6 and 110-114.

3. Claims 7, 8, 10, 14, 15, 115-117, 119, 123, and 124 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Taguchi et al. (U.S. 6,429,372) as applied to claims 1 and 108 respectively above, and further in view of Oxman et al. (U.S. 6,395,124). Applicant respectfully traverses the assertion.

Claims 7, 8, 10, 14, 15, depend on base claim 1, and claims 115-117, 119, 123, and 124 depend on base claim 108. Claims 7, 8, 10, 14, 15, 115-117, 119, 123, and 124 are believed to be allowable at least for the reasons stated previously for their base claims, namely claims 1 and 108. Applicant respectfully requests reconsideration and allowance of claims 7, 8, 10, 14, 15, 115-117, 119, 123, and 124.

4. Claims 16 and 125 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Taguchi et al. (U.S. 6,429,372) as applied to claims 1 and 108 respectively above, and further in view of Penry (U.S. 6,049,094). Applicant respectfully traverses the assertion.

Claim 16 depends on base claim 1, and claim 125 depends on base claim 108. Claim 16 and 125 are believed to be allowable at least for the reasons stated previously for their base claims, namely claims 1 and 108. Applicant respectfully requests reconsideration and allowance of claims 16 and 125.

5. Claims 17 and 126 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Taguchi et al. (U.S. 6,429,372) as applied to claims 1 and 108 respectively above, and further in view Narita (U.S. 6,144,107). Applicant respectfully traverses the assertion.

Claim 17 depends on base claim 1, and claim 126 depends on base claim 108. Claim 17 and 126 are believed to be allowable at least for the reasons stated previously for their base claims, namely claims 1 and 108. Applicant respectfully requests reconsideration and allowance of claims 17 and 126.

6. Claims 35, 36, 44, 46-48, 52, 136, 146, 148-150, and 154 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) in view of Narita (U.S. 6,144,107).

The Office Action admits that Yamamoto fails to teach a die attach material being rigid (see page 9). The Office Action indicated that “Narita teaches using an IC package having a variety of epoxy resin compositions/formulations including an epoxy resin having a hardening agent, the cured resin being rigid having a Shore D hardness around 85 to improve the moisture and crack resistance (Col. 6, line 64 – Col. 7, line 5; Col. 5-7).” The Office action further states, “It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the die attach material being rigid as taught by Narita so that the moisture and crack resistance can be improved in Yamamoto et al’s package.” (Office Action at ¶ 7 part II, page 9).

However, Narita refers to the material described as rigid in relation to the solid package (“the solid package 6 which is rigid with shore D hardness not less than 80,” col. 5 lines 36-38), and not in relation to material to attach a die to a substrate. Narita refers to the die attach material as flexible (“the adhesive 7 is set or cured but still has flexibility,” col. 5 lines 2-3, and “the adhesive 7 is set or cured but which has flexibility with shore-D hardness between 20 and 30,” col. 6 lines 36-38). Therefore the proposed combination of Yamamoto with Narita does not teach or suggest all of the elements recited or incorporated in the contested claims.

Additionally, Applicant submits that the citations from Narita cited above teach away from using a rigid material to attach a die to a substrate by emphasizing the adhesive’s flexibility. Because Yamamoto fails to teach a die attach material being rigid and because Narita teaches away from using a rigid material to attach a die to a substrate, motivation is lacking within the references themselves to combine properties of Narita’s solid package with the adhesive in Yamamoto.

The Office Action states “Narita’s teaching related to using the conventional epoxy material having rigid properties is applied to Yamamoto et al’s epoxy based die attach formulations” (page 24, ¶ B). Because motivation is lacking within the references themselves to combine properties of Narita’s solid package with the adhesive in Yamamoto, Applicant assumes this statement implies an assertion that the motivation to modify the reference or to combine

reference teachings comes from the knowledge generally available to one of ordinary skill in the art. Applicant respectfully traverses the assertion and notes that no documentary evidence is provided to support the assertion.

Official Notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known. *M.P.E.P. § 2144.03 (A)*. Applicant respectfully submits that the assertion in the Office Action does not meet this standard at least for the reason that Narita apparently teaches away from the assertion. Also, if official notice is taken of a fact, unsupported by documentary evidence, the technical line of reasoning underlying a decision to take such notice must be clear and unmistakable. *M. P. E. P. § 2144.03(B)*. Applicant notes that the Office Action has not provided any technical line of reasoning supporting the assertion. Therefore, Applicant respectfully submits that the Office Action does not establish that proper motivation is found within the knowledge generally available to one of ordinary skill in the art.

Therefore, the Office Action fails to establish a proper *prima facie* case of obviousness with respect to the claims, and reconsideration and allowance of claims 35, 36, 44, 46-48, 52, 136, 146, 148-150, and 154 is respectfully requested.

7. Claims 18, 26, 28-30, 252, 260, 261 and 263 were rejected under 35 USC § 103(a) as being unpatentable over Yew et al. (U.S. 6,049,129) in view of Yamamoto et al. (U.S. 6,265,782), Taguchi et al. (U.S. 6,429,372) and Satsu et al. (U.S. 6,225,418). Applicant respectfully traverses the rejection.

As discussed previously, Yamamoto teaches away from using a Young's modulus of less than 3MPa. Additionally, because Yew discusses an adhesive having an elastic modulus of 1300MPa (see column 4 approximately line 55), and Satsu discusses an adhesive having an elastic modulus of 0.3-0.8GPa (Table 1), the proposed combination of Yew and Satsu with Yamamoto fails to teach or suggest all of the claim limitations. Therefore, the Office Action fails to establish a proper *prima facie* case of obviousness with respect to the claims. Applicant respectfully requests reconsideration and allowance of claims 18, 26, 28-30, 252, 260, 261 and 263.

8. Claim 109 was rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Taguchi et al. (U.S. 6,429,372) as applied to 108 above, and further in view Kunitomo et al. (U.S. 5,550,408). Applicant respectfully traverses the rejection.

Claim 109 depends on base claim 108 and is believed to be allowable at least for the reasons stated previously for claim 108. Applicant respectfully requests reconsideration and allowance of claim 109.

9. Claims 19 and 253 were rejected under 35 USC § 103(a) as being unpatentable over Yew et al. (U.S. 6,049,129), Yamamoto et al. (U.S. 6,265,782), Taguchi et al. (U.S. 6,429,372), and Satsu et al. (U.S. 6,225,418) as applied to claims 18 and 252 above, and further in view of APA. Applicant respectfully traverses the rejection.

Claim 19 depends on base claim 18, and claim 253 depends on base claim 252. Claims 16 and 125 are believed to be allowable at least for the reasons stated previously for their base claims, namely claims 18 and 252. Applicant respectfully requests reconsideration and allowance of claims 19 and 253.

10. Claims 20-23 and 254-257 were rejected under 35 USC § 103(a) as being unpatentable over Yew et al. (U.S. 6,049,129), Yamamoto et al. (U.S. 6,265,782), Taguchi et al. (U.S. 6,429,372), and Satsu et al. (U.S. 6,225,418) as applied to claims 18 and 252 above, and further in view of Yamagata (U.S. 5,552,637). Applicant respectfully traverses the rejection.

Claims 20-23 depend on base claim 18, and claims 254-257 depend on base claim 252. Claims 20-23 and 254-257 are believed to be allowable at least for the reasons stated previously for their base claims, namely claims 18 and 252. Applicant respectfully requests reconsideration and allowance of claims 20-23 and 254-257.

11. Claims 24, 25, 27, 31, 32, 258, 259, 262, and 264-267 were rejected under 35 USC § 103(a) as being unpatentable over Yew et al. (U.S. 6,049,129), Yamamoto et al. (U.S. 6,265,782), Taguchi et al. (U.S. 6,429,372), and Satsu et al. (U.S. 6,225,418) as applied to

claims 18, 252, and 261 above, and further in view of Oxman et al. (U.S. 6,395,124). Applicant respectfully traverses the rejection.

Claims 24, 25, 27, 31, and 32 depend on base claim 18, claims 258 and 259 depend on base claim 252, and claims 262, 264-267 depend on base claim 261. Claims 24, 25, 27, 31, 32, 258, 259, 262, and 264-267 are believed to be allowable at least for the reasons stated previously for their base claims, namely claims 18, 252 and 261. Applicant respectfully requests reconsideration and allowance of claims 24, 25, 27, 31, 32, 258, 259, 262, and 264-267.

12. Claims 33 and 268 were rejected under 35 USC § 103(a) as being unpatentable over Yew et al. (U.S. 6,049,129), Yamamoto et al. (U.S. 6,265,782), Taguchi et al. (U.S. 6,429,372), and Satsu et al. (U.S. 6,225,418) as applied to claims 18 and 261 respectively above, and further in view of Penry (U.S. 6,049,094). Applicant respectfully traverses the rejection.

Claim 33 depends on base claim 18 and claim 268 depends on base claim 261. Claims 33 and 268 are believed to be allowable at least for the reasons stated previously for their base claims, namely claims 18 and 261. Applicant respectfully requests reconsideration and allowance of claims 33 and 268.

13. Claims 34 and 269 were rejected under 35 USC § 103(a) as being unpatentable over Yew et al. (U.S. 6,049,129), Yamamoto et al. (U.S. 6,265,782), Taguchi et al. (U.S. 6,429,372), and Satsu et al. (U.S. 6,225,418) as applied to claims 18 and 261 respectively above, and further in view of Narita (U.S. 6,144,107). Applicant respectfully traverses the rejection.

Claim 34 depends on base claim 18 and claim 269 depends on base claim 261. Claims 34 and 269 are believed to be allowable at least for the reasons stated previously for their base claims, namely claims 18 and 261. Applicant respectfully requests reconsideration and allowance of claims 34 and 269.

14. Claims 37-41 and 139-142 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Narita (U.S. 6,144,107) as applied to claims 35 and 136 respectively above, and further in view of Yew et al. (U.S. 6,049,129) and Yamagata (U.S. 5,552,637). Applicant respectfully traverses the rejection.

Claims 37-41 depend on base claim 35 and claims 138-142 depend on base claim 136. Claims 37-41 and claims 138-142 are believed to be allowable at least for the reasons stated previously for their base claims, namely claims 35 and claim 136. Applicant respectfully requests reconsideration and allowance of claims 37-41 and 139-142.

15. Claims 42, 43, 45, 49, 50, 143, 144, 145, 147, 151, and 152 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Narita (U.S. 6,144,107) as applied to claims 35 and 136 above, and further in view of Oxman et al. (U.S. 6,395,124). Applicant respectfully traverses the rejection.

Claims 42, 43, 45, 49 and 50 depend on base claim 35, and claims 143, 144, 145, 147, 151, and 152 depend on base claim 136. Claims 42, 43, 45, 49, 50, 143, 144, 145, 147, 151, and 152 are believed to be allowable at least for the reasons stated previously for their base claims, namely claims 35 and claim 136. Applicant respectfully requests reconsideration and allowance of claims 42, 43, 45, 49, 50, 143, 144, 145, 147, 151, and 152.

16. Claims 51 and 153 were rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Narita (U.S. 6,144,107) as applied to claims 35 and 136 respectively above, and further in view of Penry (U.S. 6,049,094). Applicant respectfully traverses the rejection.

Claim 51 depends on base claim 35 and claim 153 depends on base claim 136. Claims 51 and 153 are believed to be allowable at least for the reasons stated previously for their base claims, namely claims 35 and 136. Applicant respectfully requests reconsideration and allowance of claims 51 and 153.

17. Claim 137 was rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Narita (U.S. 6,144,107) as applied to claim 136 above, and further in view of Kunitomo et al. (U.S. 5,550,408). Applicant respectfully traverses the rejection.

Claim 137 depends on claim 136 and is believed to be allowable at least for the reasons stated previously for claim 136. Applicant requests reconsideration and allowance of claim 137.



18. Claim 138 was rejected under 35 USC § 103(a) as being unpatentable over Yamamoto et al. (U.S. 6,265,782) and Narita (U.S. 6,144,107) as applied to claim 136 above, and further in view of APA. Applicant respectfully traverses the rejection.

Claim 138 depends on claim 136 and is believed to be allowable at least for the reasons stated previously for claim 136. Applicant respectfully requests reconsideration and allowance of claim 138.

Allowable Subject Matter

Claims 270, 271, 275, and 276 were allowed. Applicant acknowledges the allowed claims.

Claims 272-274 were indicated to be allowable if rewritten or amended to overcome the objections set forth in this Office Action. The claims were amended to correct the informalities as suggested in the Office Action. Applicant respectfully requests reconsideration and allowance of claims 272-274.

**CONCLUSION**

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612) 371-2103 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

TONGBI JIANG ET AL.

By their Representatives,

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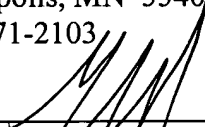
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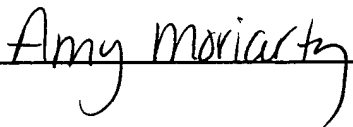
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